Developing a Business Model Transformation Tool

Christian Fleig[1] and Dominik Augenstein[1]

[1] Karlsruhe Institute of Technology (KIT), Fritz-Erler-Str. 23, 76133 Karlsruhe

Abstract. As promising chance, Industry 4.0 (I4.0) enables companies to defend their position in fast changing markets and to respond on individual customer demands. How-ever, companies have challenges to implement I 4.0 strategies in their current business. We present a research-in-progress design science project with the aim of designing a business model configuration tool enabling company transformation to I 4.0. Based on a comprehensive problem analysis and literature study, we demonstrate a first prototypical instantiation and demonstrate its feasibility in a case study. This tool enables practitioners as well as theorists to observe changes in business models rapidly and support transformations to I 4.0. With the tool, companies can understand their business models better and find a target business model, which is really fitting to the individual way of value creation of the company.

1 Introduction

Increasing global competition and new opportunities driven by a growing number of services and digitalization force companies to adapt their business models (BM) to the new environment [5]. Besides, consumers are more than ever able to compare products and services on the markets. Therefore, companies have to rethink their traditional way of doing business [3]. I 4.0 provides new possibilities to satisfy these customer demands and enables companies to defend their competitors position. As in former times, I 4.0 was relatively unknown in companies, the attention to this trend increased. Nowadays, I 4.0 is widely accepted in companies as new challenge and companies see the advantages [4]. However, still unknown exists, how I 4.0 can be adapted to the own BM. In fact, I 4.0 is not a solution, which fits to all companies

equaly. Furthermore, companies have to find their own way, of which aspects of I 4.0 they can benefit [1]. Having a solution in mind, the challenge is, to adapt their current BM to such an I 4.0 solution. Thereby current concepts like the BM canvas of Alexander Osterwalder [2] can give a good overview about the current state and also can help to find a target state. However, their purpose is not to provide a support for such a transformation as I 4.0 requires. More precise, the current approaches do not allow in special to transform the current state to the target state, as they should only get an overview about the different states of a BM. We therefore want to provide a BM tool, which supports I 4.0 transformations of BM. The aim is to support transformations, so that companies are able to transform their current BM to the target state sucessful. As successful transformation, we see here the degree of accordance between transformed and target BM. Therefore, the related research question is:

Which design principles of a BM transformation tool increase the degree of successful transformation by reaching the target state?

To answer this question, we propose a design science research (DSR) project [7]. While existing research mainly focuses on empirical, strategic and conceptual aspects in BMs, we want to derive new design principles which contribute to the demanded requirements. From a scientific point of view, we contribute to the design knowledge base for building BM tools. When building BM tools according to validated principles, practitioners should be able to transform their BM to an I 4.0 scenario.

2 Related Work

Several authors focus on definition of business models. One possible definition of Timmers [6] defines business models as: "an architecture for the product, service and information flows, including a description of the various business actors and their roles; and a description of the potential benefits for the various actors; and description of the sources of revenue".

In order to increase business models, several scientists found more than twenty BM frameworks with different purposes of use and field of study [8]. However, the introduction of Osterwalders ontology for BMs [2] changed the situation. With his ontology, he prepares the way for a new way of business modelling. As a result, researchers add further dimensions to transform the flat canvas to a multidimensional cube. Thus, the categories of the BM canvas are rearranged in a way, that they reflect the interlinks and should inter alia support the management in implementing a strategy (Lindgren and Rasmussen, 2013). Practical tools using this BM cube are for example the "NEFFICS platform" or "VDMBee".

3 Method and first result

Aiming to design a BM transformation tool, we apply the Design Science Research (DSR) approach of Vaishnavi, Kuechler [7]. We consider this approach as a promising possibility to not only understand the factors of transformation, but also to find an adequate software tool. According to Vaishnavi, Kuechler [7] we plan our DSR project in three cycles. In cycle one we do a literature review and expert interviews with our business partner KPMG because of its' knowledge of transformating. Out of the interview results, we derive design principles and build a first prototype. To evaluate it, we will do a feasibility test and show, that our mock-up rebuilds a BM transformation of a real business case. As a pre-evaluation, we let 20 students in groups of four people model a BM transformation with BM canvas templates. Afterwards we compare the outcomes with the outcomes of using the tool for this transformation and hope for an improvement of the results by using the tool. The following picture shows a first overview about the mock-up. The current and target states are shown as graphs. The different graphs can be mapped and it can be found out, which elements have to be changed. Through the connection with KPIs, an optimal transformation state can be found. Based on the results of the evaluation of the first cycle, we will realize a first running version of the BM configuration tool and perform a lab based evaluation of the software artefact in the second cycle. Finally, in

cycle 3 we will deploy the software in the field in cooperation with our industry partner. The purpose of the field experiment is to evaluate how our tool actually contributes a successful transformation in real-life. The outcome will be design knowledge about the functions of the tool.
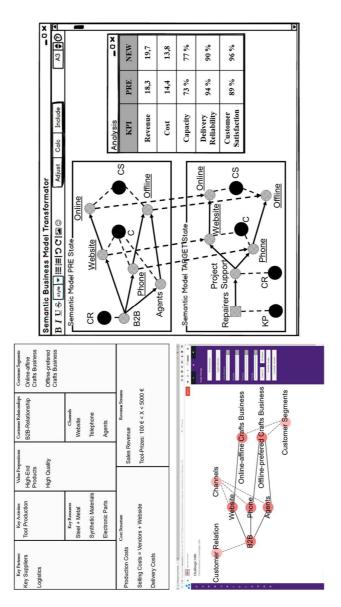

Fig. 1: BM transformation mock-up

4 Conclusion

I 4.0 provides new possibilities for companies as well as challenges. One challenge is, that existing BM approaches do not support a business model transformation. In this work we showed an approach to support BM transformation in I 4.0. The retrieved knowledge can be used for general transformation tools and as an improvement of related design knowledge in general.

References

1. Bauernhansl, Thomas (2014): Die Vierte Industrielle Revolution – Der Weg in ein wertschaffendes Produktionsparadigma, Springer Fachmedien Wiesbaden

2. Osterwalder, Alexander (2004): The Business Model Ontology – A Proposition in a Design Science Approach.

3. Piccinini, Everlin; Gregory, Robert Wayne; Kolbe, Lutz M. (Eds.) (2015): Changes in the Producer-Consumer Relationship-Towards Digital Transformation. Wirtschaftsinformatik.

4. Spath, Dieter (Ed.) (2013): Produktionsarbeit der Zukunft - Industrie 4.0. [Studie]. Fraunhofer-Institut für Arbeitswirtschaft und Organisation. Stuttgart

5. Teece, David J. (2010): Business Models, Business Strategy and Innovation. In Long Range Planning 43 (2-3), pp. 172–194. DOI: 10.1016/j.lrp.2009.07.003.

6. Timmers, P. (1998): Business Models for Electronic Markets. In Electronic Markets 8., 1998 (2), pp. 3–8, checked on 7/19/2016.

7. Vaishnavi, V.; Kuechler, W. (2004): DSR in Information Systems.

8. Wirtz, Bernd W. (2011): Business model management. Design - instruments - success factors. 1. ed.: Gabler.